

## MILL ENGINEERS OPEN CONVENTION AND COMMITTEES PRESENT REPORTS

A. Gartley Presides and Five Subjects Are Discussed in First Day's Session

Over 160 strong the mill engineers of Hawaii under the auspices of the Hawaiian Engineering Association met this morning at the Library of Hawaii for the first session of the convention, which will last until Wednesday.

At 8:30 Chairman C. V. Anderson called the meeting to order and after saying a few words of welcome gave the chair to A. Gartley, who will preside over the meeting today.

The subjects read and discussed this morning were "Field Machinery," "Boilers and Furnaces," and "Lubrication," and this afternoon the papers were "Electricity," and "Evaporators and Pans."

This evening all the engineers and their friends will go to the Bijou theater where a section will be reserved. Sunday morning 60 engineers and their guests, the chemists, spent a hilarious day at Nanakuli beach enjoying bathing, playing games and eating the picnic luncheon furnished by James Hamilton of the Commercial Club.

In taking up the first paper, "Field Machinery," A. Gartley emphasized the point that all such machinery should be simple, both as to construction and operation, and the discussion mostly centered about the best kind of plow to use in different ground with the caterpillar engine, especially where trash has to be contended with. It was the opinion of most that at present no plow had yet been made which worked satisfactorily with the caterpillar, but the problem was now being worked on. R. Renton Hind told about a device which was being developed for the conveying of sugar cane from the fields to the permanent flumes, and which, he hoped, to have ready for use in a few months. A machine to load cane into the cars at a rapid rate was being worked out. It was announced by H. L. Freeman.

In discussing his paper, "Boilers and Furnaces," A. G. Budge, said that many changes had been recently made in boiler equipment, resulting in the controversy over which is better, the water tube boiler or the fire tube boiler.

Budge claimed that the water tubes were superior. That while they might cost a third more, they were cheaper in the long run and were far safer from explosions. The main point in their favor, however, was that they were built to stand a higher pressure of steam, and as the higher steam pressure is fast coming into use, it will soon be necessary for the plantations to install them.

The question then came up over the development of steam, and R. R. Hind said that he had had one of both kinds installed and found that he could get more steam in a given time with water tubes than with fire tubes. Recently many of the plantations have installed three-inch tubes in the boilers and comparison was made between them and the four-inch tubes. Some of the members declared that they had been satisfactory, while others found they became choked with ashes and the circulation was poor.

On the topic of boiler settings Hind said that the boilers should be supported on independent steel frames and not rest on the brick work, the contention being that if the boiler rests on the brick work the latter is likely to crack. It was declared, however, that if expert masons were employed, a large percentage of the cracks would not occur.

That a system whereby the boilers on the plantations could be inspected every year and that it was really necessary to have inspection to avoid all chances of explosions, was said by W. G. Hall to be imperative. He proposed that an expert be brought down from the mainland every year.

The next question under the subject of boilers was the testing of water and the consensus of opinion was that compounds were of little use and often harmful. Many of the members, however, said that they had used different makes of compounds and found them ideal in keeping the tubes clean. Water softeners and other methods of preventing scaling were compared and ways of employing them discussed.

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The first report presented was on "Field Machinery," and was as follows:

### Reports On Field Machinery

Having received but one letter in response to a number of requests for information on this subject, it is difficult to submit a report which would conform with your desires.

Field machinery seems to me to be an item that has received very little consideration on the plantations, owing to the good old stand-by, "cheap labor." But times are changing; we cannot get the laboring man as cheap as before, and labor is short throughout the majority of the plantations resulting in the plantations having to pay more to keep what labor they have.

Most of the plantations are not putting the same amount of work on the cane as they did a few years ago, and if labor keeps on reducing it will be a case of reducing the acreage. I consider it is up to us to get our heads together and try to build machinery that will overcome this difficulty.

**Clearing Cane Trash:** It is the practice now with many of the plantations to leave the trash on the ground after the cane has been cut. Then this trash has to be cleaned from the cane stools, so that they can come up without disturbance. This work is generally done with men and hoes, but I think it will be possible to build a machine to do this work satisfactorily.

**Plowing:** The plowing in this part of the island is done mainly with disc plows, hauled by mules. It would not be profitable for the plantations to use any other kind of power, as the fields are mostly in such a condition that no other power could enter. I believe at Aiea they have a two-furrow double mould board plow, made by Fowler & Co., Leeds. This plow, it is claimed, can prepare the land for half of what it cost before; no doubt the plantations which use steam plows will consider this apparatus.

**Fertilizing:** There has been many different makes of fertilizing machines introduced into these islands, but in most cases they are too lightly constructed for our rough cane lands. With a little time and careful consideration fertilizing machinery could be built at the plantations to suit the conditions better than anywhere else.

**Cane Cutting:** There have been a few attempts to build cane-cutting machines, but none have proved themselves to be a commanding advantage over the cane knife, so as to take the lead. If a cane-cutting machine was only wanted to cut the root end of the stick, I think a machine of something the same make as a grain harvester (but much heavier) would do the work.

Suppose this practice was carried out. The cane would be put in bundles about 100 to 200 pounds and a knife could be arranged to cut off the worst of the cane tops, without cutting off too much cane. Would the cane tops that are left increase the milling to such an extent that it would be profitable to use such a machine?

**Cane Loading and Transportation:** Mr. C. W. Girvin of Hoea Mill gives a description of the cane loading and transportation at North Kohala. There are several means of handling cane used here. The one most generally used is the heavy wagon traction engine, but the caterpillar engine is beginning to supersede this method. There are two loading machines in use; but this coming season a new type is to be tried out, which consists of a small-sized caterpillar engine with a cane handling rig built upon it.

At Waiakae we have nothing new in the way of cane-handling machinery, but the system is very good and I don't think it can be improved on a great deal under the circumstances. The cane is hauled on sleds to points on the track and loaded into cars by a gasoline hoist fitted on a turning table with a friction clutch. Two hooks suspended from the crane of the loaded hook into a sling beneath the crane on the sled. The sling with its load of cane is hoisted above the car. Here a man by simply pulling a cord releases a trigger in the sling, which parts in two and the load of cane falls into the car. This cane loader is built on a car so that it can be readily moved from point to point and is run on and off the track by means of a portable switch. When in working order it stands eight feet from the nearest rail and the crane end of the machine is tilted up 18 degrees. This tilt enables the machine to swing round quickly.

In a ten-hour day this machine can load about 350 tons of cane. This is partly due to the quick sling known as the "Waiakae Sling."

Respectfully submitted,  
JOSEPH WYLLIE,  
Chairman, Committee on Field Machinery and Cane Transportation.

The committee on lubrication reported:

Lubrication is a subject in which, no doubt, all are interested from the lawn mower man to the oiler, the owner of an automobile and sugar mill engineers. In this particular instance I will endeavor to take up a

part of the subject of lubrication in a sugar factory.

In selecting an oil for the steam cylinders, it is necessary to have some understanding of the conditions under which it is to be used. The steam pressure, moisture of the steam and viscosity must be taken into consideration. Oil of too high a flash and burning point will not give proper lubrication, any more than one with too low. The steam in the cylinders is more or less wet and it therefore becomes necessary to use an oil which contains some animal oil or fat in order to take care of the moisture.

The great majority of cylinder and piston troubles are due to improper lubrication frequently caused by the oil used not being suited to the conditions and it sometimes happens that the trouble is not with the oil itself but with the method of applying the oil and the place where the oil is applied. It is quite a common practice to reduce the quantity of cylinder oil used to the least possible amount thereby cutting down the oil bill and in many cases this increases the friction of the engines, scores the cylinders which increases the fuel bill and instead of economizing by reducing the cost of lubrication, increases the operating expense by using more fuel and in repairs, etc.

No matter how little cylinder oil you are using, far better results will be obtained with a smaller quantity, drop for drop at a lower cost, by using a suitable oil with a force feed lubricator. The sight-feed or hydraulic lubricator has served its purpose, and to get better results, a force feed lubricator, which makes it possible to regulate the feed by applying the same amount on each stroke and remains constant after it is once set, should be used. We have found a saving of from forty to fifty per cent with force feed lubricators. It therefore pays to place the oil in the right place and you will naturally require less oil, and the same applies in the case of your vacuum pans and boilers, which will have less oil to contend with.

If an open feed water heater or hot well is used, the cylinder oil finds its way into the boilers and the animal fat in ordinary cylinder oil causes a coating on the boiler tubes. Graphite used in combination with pure mineral cylinder oil, the graphite will find its way into the boilers and tend to prevent the formation of scale.

The thickest and best cylinder oil becomes thin when heated so that it squeezes out from between the surfaces it is supposed to lubricate. It has been our custom for years to use graphite in our main steam cylinders, thereby cutting the cost of the oil to a very low margin and yet maintaining the smoothest surfaces on the cylinder walls, piston rings and rods. This reduces the friction which is the real reason for lubrication. It is not necessary to use a great quantity of graphite, for a small amount mixed with the oil, or dry graphite fed directly in the cylinders will thereby reduce the quantity of cylinder oil to a great extent.

### Cylinder Oil Test

A careful inspection of the surface of the cylinder, piston and valves should be made and cleaned of all deposits. An accurate record should be kept of all running time and the oil should be weighed and the feed adjusted to give the minimum amount that would effect smooth and quiet operation. At the close of each test a second inspection should be made and observations taken as to the condition of valves and cylinders. Each sample of oil tested should be reported and data should be compared with other samples.

### Engine Oil

During 1913 there was installed at Paia by Mr. Paul Melchard of the Standard Oil Co. a lubricating system which has proved very successful. It consists of a 100-gallon drum placed over the main engines; pipes were led from this drum to each cup on the main engines and fitted to a 3/4-inch cock to regulate the flow of the oil to the bearings. The drip pans of the engines were made oil tight and drains led from these pans to a filter from which it is pumped to the main tank above the engines.

A continuous stream of clean, cool oil is supplied to the bearings. A large quantity of oil is used but this oil is collected, filtered and used over again thereby saving an enormous amount of oil which would otherwise be wasted.

The proper lubrication of a power plant is worthy of the most careful study. The cost of operating an expensive engine may be reduced below that of a cheap one simply because the latter is not properly lubricated. Without the right quantity of oil between the two rubbing surfaces, there will be a friction loss which goes on day by day, which means an increase in the fuel bills. This may not be noticed in some of the sugar factories where they have an ample supply of bagasse, but where bagasse and boiler capacity are barely sufficient, and where fuel oil is used, as in many of the large factories, any unnecessary friction will increase the cost of production.

### Test for Engine Oil

It may not be out of place to mention at this time that before giving engine oil a trial, it is perhaps a good plan to test the oil submitted.

Shake a sample of the oil with a little caustic soda and if it clouds up like soap, it shows the presence of animal oil and should be rejected. Take a sample bottle of the oil, place same in an ice-chest and if it becomes cloudy, it should also be rejected as it shows it to be a common paraffine oil and will not stand heat nor will it lubricate.

In making a test of engine oil, all bearings should be cleaned and a thermometer should be placed in the bearing to be tested and the temperature taken every fifteen (15) minutes for a four (4) hour run. Each oil tested should be given a number and entered in a report. A thermometer should also be placed in the engine room to compare the temperature of the bearings tested and a record of all running time, amounts of oil used, drops per minute kept. After a careful com-

parison of the oils tested and oils selected and found satisfactory, it has been our experience that it does not pay to change oil, regardless of what the traveling salesman claims for his oil, both as to price and quality.

### Roller Oil and Oil Grooves

Roller oil should be of a heavy gravity and thick in order that it will not run off too freely. Some sugar factories claim to have obtained very good results from using common crude oil on their bottom roller journals and reducing their cost of lubrication to a very low figure. Personally, I have had no experience in using crude oil for this purpose and our cost of .028 cents per ton of sugar manufactured for all lubrication compares very favorably with the cost per ton of other factories, but still it is not considered any too low.

With the enormous pressure that is now being carried on mill rollers in the modern sugar factory, together with the high peripheral speed of the rollers, it is sometimes a difficult matter to keep roller journals running cool, regardless of what oil is used and only by careful attention to the matter can this difficulty be overcome. It is very necessary for the mill engineer, to give his best attention, during the off-season, to all matters pertaining to the mill as any neglect on his part will cause unnecessary delay during the grinding season.

Our experience for years has been that the best results with roller journals can be obtained by having two, and only two, grooves cut in each journal nearly the full length opposite each other. The oil grooves in the journals carry the oil over the bearing forming a thin layer between the bearing and the journal, and should be dropped on the journal in the center with a sight feed oil cup. The top mill roller brasses should be bored smooth 1-32 to 1-16th of an inch larger than journal with ample clearance on each side of the brasses about 2-12 inches cut away so that the brass and oil grooves should be cut in these brasses as they only cut down bearing surface and fill up with dirt.

With this method of oil grooving the highest speed may be obtained and a pressure of hundreds of tons can be carried on mill rollers with safety and enable you to place the oil in the right place where it will be most effective and naturally you will use the least quantity of oil. Should there be any overheating, it will most likely be caused by juice coming in contact with journals, or perhaps by the rollers not being parallel or level—a common occurrence in a sugar factory. Good results can only be obtained by constant leveling and trimmings, which will go to prove that the trouble is not with the oil, but with the conditions that will have to be remedied before a cool bearing can be obtained. Respectfully submitted,

J. MEINECKE,  
Chairman, Committee on Lubrication.

## MORE THAN THIRD OF POLICE CASES ARE FROM BOOZE

The weekly police record bears the names of many who came to grief from over-indulgence in spirituous liquors. Last week out of 118 arrests 31 were for drunkenness, 12 were gambling, 11 assault, 17 vagrancy, 4 threatening, and 4 for selling liquor without a license.

Some sad tales, for which booze was largely responsible, were told each day of the week in police court, and some of the victims of drink received a further penalty in the nature of a fine or imprisonment.

On Tuesday's calendar was Louis Steinberg, who was accused of threatening to kill his wife and child while drunk and of carrying a pistol for that purpose. He was placed under a \$250 bond for one year to keep the peace.

Muranaga of Waimanalo forfeited a \$100 bail in police court Wednesday for selling liquor without a license.

That same day Detective Anderson rescued at the beach a bather whom Anderson says had nearly succumbed from drowning because of intoxication. The emergency hospital records show plainly how men get into trouble who are loaded with "square-faces." Late last week three cases came in during one evening which came directly from drink. One was a drunken brawl between a husband and wife in which the husband suffered a cut on the arm; another struck at a friend while in a drunken frenzy, missed his objective and crashed his fist through a window, cutting his hand severely; a third, a woman, came to the police station with a bleeding finger which she said her husband endeavored to chew while maddened with drink.

### BELFAST PREPARES FOR BOOM

[By Associated Press] BELFAST, Ireland.—Belfast is preparing for a boom in shipbuilding after the war. Harland & Wolff have just leased from the harbor board forty-one acres of additional land at a cost of 2500 pounds a year. Workman & Clark are also increasing their shipbuilding slips. The congestion of building on the Clyde has also led to applications to the harbor board for accommodation in Belfast.

### CONTRACTS WITH GERMANS

[By Associated Press] AMSTERDAM, Netherlands.—The Luxenburg iron manufacturers have prolonged their contract with the Association of German Smelting Furnaces to the year 1920, according to the correspondent of the Tyd. Up to the year 1910 the iron manufacturers in the grand duchy were allied to the smelting furnaces in Lorraine, but in 1911 a part of them joined the big German association and the rest shortly afterwards followed this example.

## Glass of Hot Water Before Breakfast a Splendid Habit

Open sluices of the system each morning and wash away the poisonous, stagnant matter.

Those of us who are accustomed to feel dull and heavy when we arise; splitting headache, stuffy from a cold, foul tongue, nasty breath, acid stomach, lame back, can, instead, both look and feel as fresh as a daisy always by washing the poisons and toxins from the body with phosphated hot water each morning.

We should drink, before breakfast, a glass of real hot water with a teaspoonful of limestone phosphate in it to flush from the stomach, liver, kidneys and ten yards of bowels the previous day's indigestible waste, sour bile and poisonous toxins; thus cleansing, sweetening and purifying the entire alimentary tract before putting more food into the stomach.

The action of limestone phosphate and hot water on an empty stomach is wonderfully invigorating. It cleans out all the sour fermentations, gases, waste and acidity and gives one a splendid appetite for breakfast and it is said to be but a little while until the roses begin to appear in the cheeks. A quarter pound of limestone phosphate will cost very little at the drug store, but is sufficient to make anyone who is bothered with biliousness, constipation, stomach trouble or rheumatism a real enthusiast on the subject of internal sanitation. Try it and you are assured that you will look better and feel better in every way shortly.—Adv.

## EMPLOYED BOYS OF Y. M. MEET AND EAT TONIGHT

A big time is on for the employed boys' group of the boys' department of the Y. M. C. A. tonight. This group will meet this evening at 6 o'clock for a bean supper and to hear the plans for the year for their group. The beans will be spilled in Cooke hall of the association building.

Besides the feast a good program has been arranged. There will be movies, Comics, serious and educational reels will be among those thrown on the screen; a ukulele solo by David Bent, a vocal solo by George Andrus, some short, snappy talks by the big brothers and one or two specials by the boys themselves.

## CHINESE FAIR TO BE HELD AGAIN TONIGHT

So successful was the Chinese fair held on Friday and Saturday nights at the Fort Street church that it has been decided to continue it tonight, opening at 7 o'clock. Many articles, which are suitable for Christmas presents, will be disposed of at reduced prices. No admission will be charged tonight.

### WILL FIGHT RINDERPEST

[By Associated Press] MANILA, P. I.—A plan to establish ten government plants for the manufacture of rinderpest serum, has been initiated by Adriano Hernandez, director of the bureau of agriculture. Funds have been secured and the

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plants will soon be in full operation. Rinderpest continues to be a serious problem for Philippine cattle owners but the bureau of agriculture by quarantine and immunization is waging a vigorous campaign against the scourge. A requisition for serum has been sent to French Indo-China and this will enable the bureau to keep up its work until all ten serum manufacturing plants are in full swing. These plants are to be located in cattle centers in different parts of the islands.

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